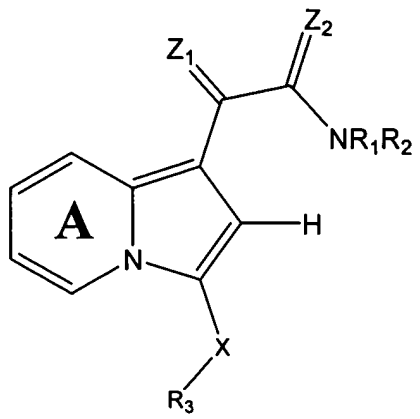
CLAIMS

What is claimed is:

1. A compound represented by the following structural formula:



;

or a pharmaceutically acceptable salt thereof, wherein:

Ring **A** is substituted or unsubstituted and is optionally fused to an aryl group;

Z_1 and Z_2 are independently =O, =S, =N-OR_{12} or =NR_{12};

R_1 and R_2 are independently -H, an aliphatic group, a substituted aliphatic group, an unsubstituted non-aromatic heterocylic group, a substituted non-aromatic heterocylic group, an unsubstituted aryl group or a substituted aryl group, provided that R_1 and R_2 are not both -H; or -NR_1R_2, taken together, is a substituted or unsubstituted non-aromatic nitrogen-containing heterocyclic group or a substituted or unsubstituted nitrogen-containing heteroaryl group;

R_3 is a substituted or unsubstituted aryl group or a substituted or unsubstituted aliphatic group;

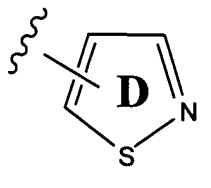
X is a covalent bond, -$C(R_4R_5)$-, -$N(R_4)$-, -O-, -S-, -S(O)-, -$S(O)_2$-, -C(=O)-, -C(=O)-$N(R_4)$-, or -$N(R_4)$-C(=O)-;

R_4 and R_5 are independently -H or a substituted or unsubstituted aliphatic group; and

R_{12} is -H or a substituted or unsubstituted alkyl group.

2. The compound of Claim 1 wherein: Ring **A** is substituted or unsubstituted; Z_1 and Z_2 are both =O; R_1 is -H; R_2 is a substituted or unsubstituted alkyl or aryl group; R_3 is a substituted or unsubstituted aryl group; and X is $-C(R_4R_5)-$, $-N(R_4)-$ or -O-.

3. The compound of Claim 2 wherein R_2 is represented by a structural formula selected from:



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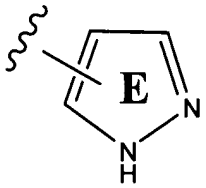

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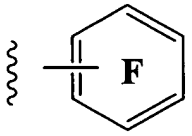

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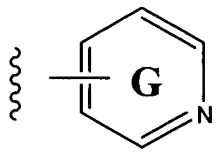

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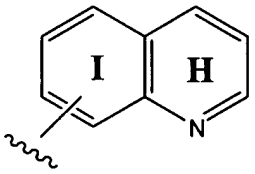

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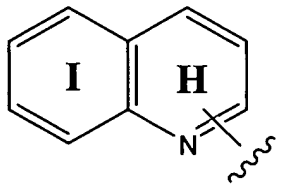

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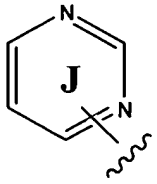

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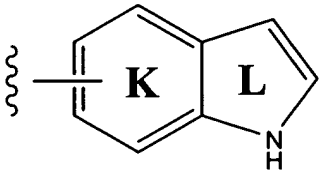

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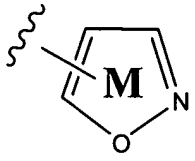

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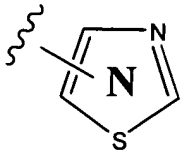

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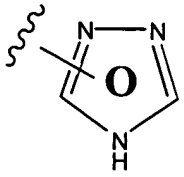

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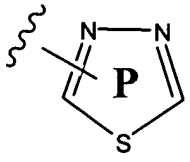

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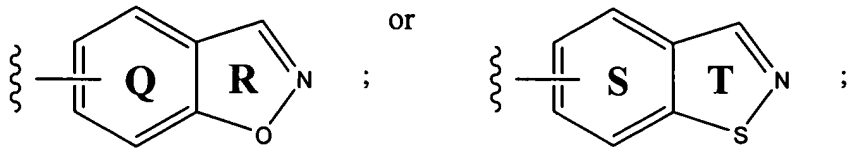
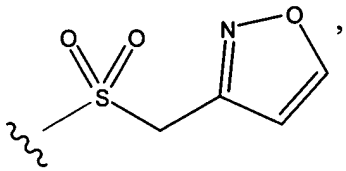
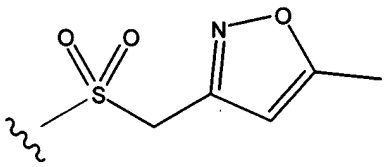


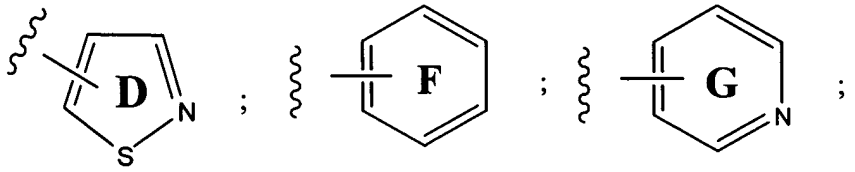
wherein Rings **D-T** are substituted or unsubstituted.

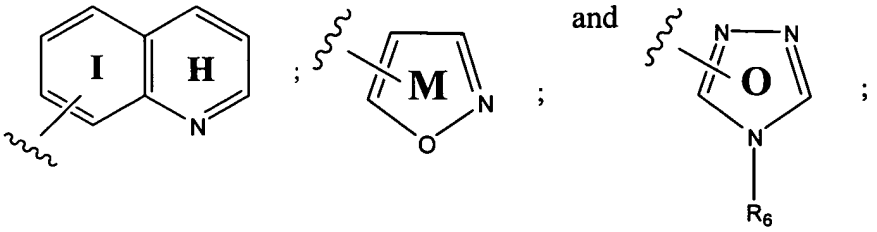
4. The compound of Claim 3 wherein zero, one or more ring carbons atoms of Rings **D-T** are substituted a group independently selected from -OH, -Br, -Cl, -I, -F, $-OR^a$, $-O-COR^a$, $-COR^a$, -CN, $-NO_2$, -COOH, $-SO_3H$, $-NH_2$, $-NHR^a$, $-N(R^aR^b)$, $-COOR^a$, -CHO, $-CONH_2$, $-CONHR^a$, $-CON(R^aR^b)$, $-NHCOR^a$, $-NRCOR^a$, $-NHCONH_2$, $-NHCONR^aH$, $-NHCON(R^aR^b)$, $-NR^cCONH_2$, $-NR^cCONR^aH$, $-NR^cCON(R^aR^b)$, $-C(=NH)-NH_2$, $-C(=NH)-NHR^a$, $-C(=NH)-N(R^aR^b)$, $-C(=NR^c)-NH_2$, $-C(=NR^c)-NHR^a$, $-C(=NR^c)-N(R^aR^b)$, $-NH-C(=NH)-NH_2$, $-NH-C(=NH)-NHR^a$, $-NH-C(=NH)-N(R^aR^b)$, $-NH-C(=NR^c)-NH_2$, $-NH-C(=NR^c)-NHR^a$, $-NH-C(=NR^c)-N(R^aR^b)$, $-NR^dH-C(=NH)-NH_2$, $-NR^d-C(=NH)-NHR^a$, $-NR^d-C(=NH)-N(R^aR^b)$, $-NR^d-C(=NR^c)-NH_2$, $-NR^d-C(=NR^c)-NHR^a$, $-NR^d-C(=NR^c)-N(R^aR^b)$, $-NHNH_2$, $-NHNHR^a$, $-NHR^aR^b$, $-SO_2NH_2$, $-SO_2NHR^a$, $-SO_2NR^aR^b$, $-CH=CHR^a$, $-CH=CR^aR^b$, $-CR^c=CR^aR^b$,$-CR^c=CHR^a$, $-CR^c=CR^aR^b$, $-CCR^a$, -SH, $-SR^a$, $-S(O)R^a$, $-S(O)_2R^a$, alkyl groups, substituted alkyl group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group, benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein R^a-R^d are each independently an alkyl group, substituted alkyl group, benzyl, substituted benzyl, aryl or substituted aryl group, or,$-NR^aR^b$, taken together, can also form a substituted or unsubstituted non-aromatic heterocyclic group.

5. The compound of Claim 3 wherein zero one or more ring carbon atoms of Rings **D-T** are independently substituted with a group selected from C1-C4 alkyl, C1-C4 hydroxyalkyl, *N*-morpholino, pyrimidyl, C1-C4 alkyl substituted pyrimidyl,

-N(C1-C4 alkyl)$_2$, -C(O)NH$_2$, -C(O)NH(C1-C4 alkyl), C(O)N(C1-C4 alkyl)$_2$, -NHC(O)(C1-C4 alkyl), -NO$_2$, C1-C4 alkoxy, -C(O)O-CH$_2$CH$_2$-N(C1-C4 alkyl)$_2$,  ,  , -NH-(phenyl), -NH$_2$, -CH$_2$NH-C(O)-O-(C1-C4 alkyl), -CH$_2$NH$_2$, -Cl, -F, -C(O)-O-(C1-C4 alkyl), -C(O)-N-(C1-C4 alkyl), C3-C7 cycloalkyl, phenyl, -C(O)-*N*-morpholino, -S-(C1-C4 alkyl), -CN, furyl, -S(O)$_2$-(C1-C4 alkyl), -S(O)$_2$-NH$_2$, -S(O)$_2$-NH(C1-C4 alkyl) and -S(O)$_2$-N(C1-C4 alkyl)$_2$.

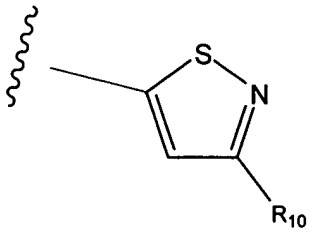
6. The compound of Claim 5 wherein R_2 is represented by a structural formula selected from:





and R_6 is -H or a substituted or unsubstituted alkyl group.

7. The compound of Claim 5 wherein R_2 is represented by a structural formula selected from:



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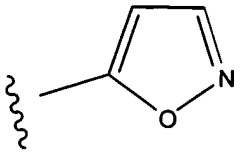

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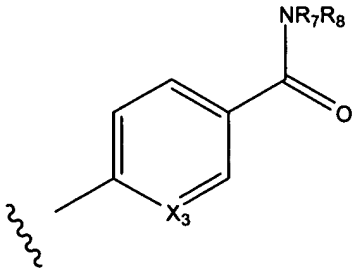

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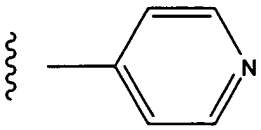

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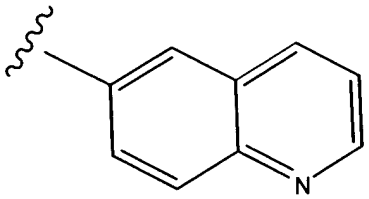
and



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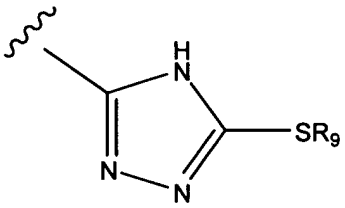


;

wherein:

X_3 is -CH- or -N-;

R_7 and R_8 are independently -H or an alkyl group or $-NR_7R_8$, taken together, is a nitrogen-containing non-aromatic heterocyclic group;

R_9 is an alkyl group; and

R_{10} is -H or an alkyl group.

8. The compound of Claim 7 wherein Ring **A** is optionally substituted with one or more groups selected from -F, -Cl, -Br, -C1-C4 alkyl, C1-C4 alkoxy, -C1-C4 haloalkyl, C1-C4 haloalkoxy, $-NH_2$ and -CN.

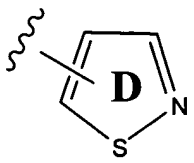
9. The compound of Claim 8 wherein Ring **A** is unsubstituted; R_3 is a phenyl group or pyridyl group substituted with zero, one or more substituents selected from -Br, -Cl, -F, $-R^e$, $-OR^e$, -CN, $-COOR^e$, $-N(R^e)_2$, $-CON(R^e)_2$, $-NR^eCOR^f$, $-NHCONH_2$ and $-SO_2N(R^e)_2$; R_7 and R_8 are both -H and R_9 is methyl; and each R^e and R^f are independently -H, an alkyl group or a substituted alkyl group.

10. The compound of Claim 9 wherein R_3 is a phenyl ring substituted with zero one or more substituents selected from -Cl, -F, $-R^e$, $-OR^e$, -CN, $-NH_2$, $-CONH_2$ and $-NHCOR^f$.

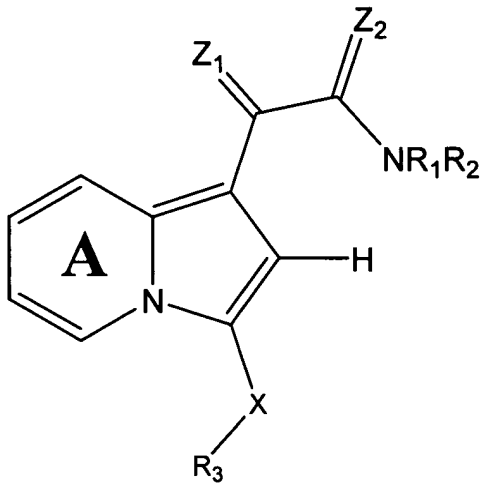
11. The compound of Claim 10 wherein R_3 is a phenyl ring substituted with zero one or more substituents selected from $-CH_3$, $-CH_2CH_3$, $-OCH_3$, -CN, -F and -Cl.

12. The compound of Claim 11 wherein R_3 is a phenyl ring that is unsubstituted or monosubstituted with $-CH_2CH_3$, $-OCH_3$, -CN, -F or -Cl and wherein the phenyl ring substituent is at the *para* position.

13. The compound of Claim 4 wherein R_2 is represented by the following structural formula:



14. A method of treating a subject with cancer comprising administering to the subject an effective amount of a compound represented by the following structural formula:



;

or a pharmaceutically acceptable salts thereof, wherein:

Ring **A** is substituted or unsubstituted and is optionally fused to an aryl group;

Z_1 and Z_2 are independently =O, =S, =N-OR_{12} or =NR_{12}.

R_1 and R_2 are independently -H, an aliphatic group, a substituted aliphatic group, an unsubstituted non-aromatic heterocylic group, a substituted non-aromatic heterocylic group, an unsubstituted aryl group or a substituted aryl group, provided that R_1 and R_2 are not both -H; or -NR_1R_2, taken together, is a substituted or unsubstituted non-aromatic nitrogen-containing heterocyclic group or a substituted or unsubstituted nitrogen-containing heteroaryl group;

R_3 is a substituted or unsubstituted aryl group or a substituted or unsubstituted aliphatic group;

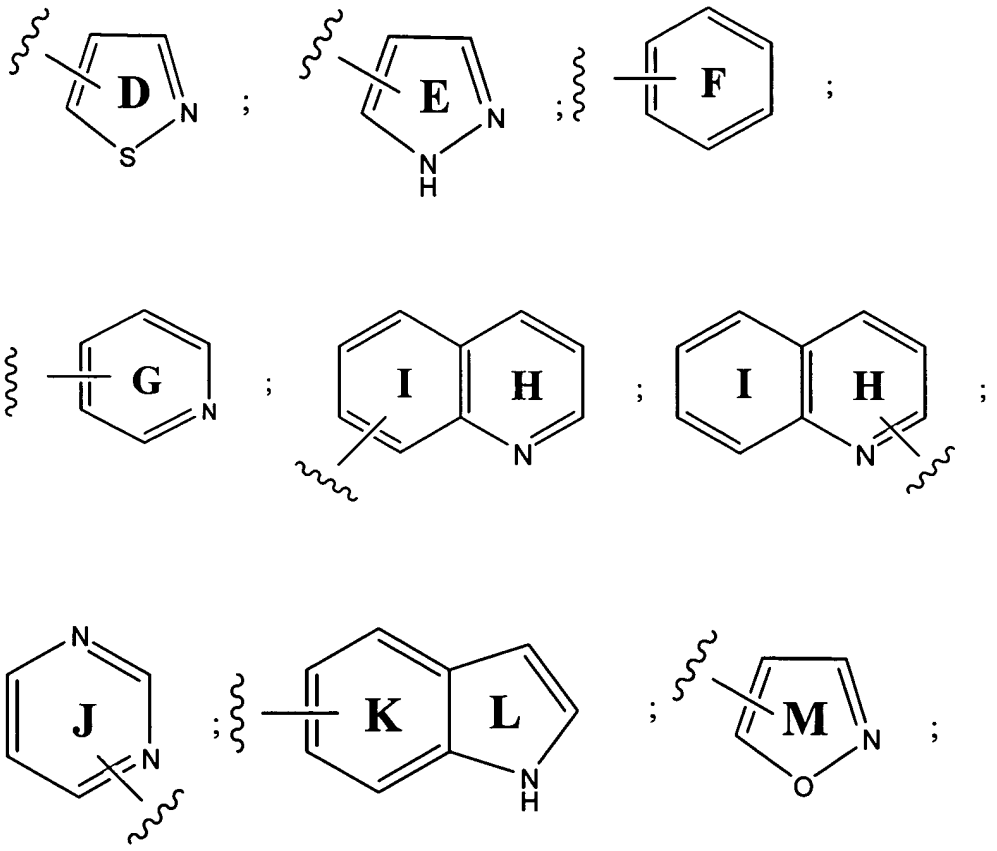
X is a covalent bond, -$C(R_4R_5)$-, -$N(R_4)$-, -O-, -S-, -S(O)-, -$S(O)_2$-, -C(=O)-, -C(=O)-$N(R_4)$-, or -$N(R_4)$-C(=O)-;

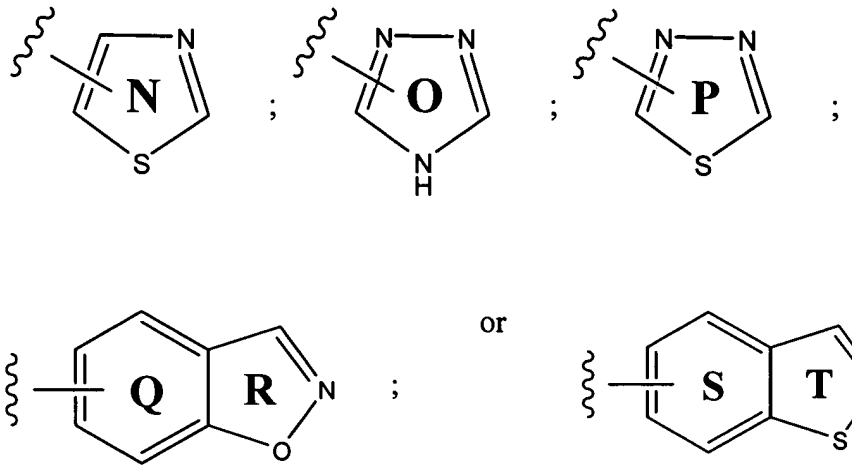
R_4 and R_5 are independently -H or a substituted or unsubstituted aliphatic group; and

R_{12} is -H or a substituted or unsubstituted alkyl group.

15. The method of Claim 14 wherein: Ring **A** substituted or unsubstituted, Z_1 and Z_2 are both =O; R_1 is -H; R_2 is a substituted or unsubstituted alkyl or aryl group; R_3 is a substituted or unsubstituted aryl group; and X is $-C(R_4R_5)-$, $-N(R_4)-$ or -O-;

16. The method of Claim 15 wherein R_2 is represented by a structural formula selected from:



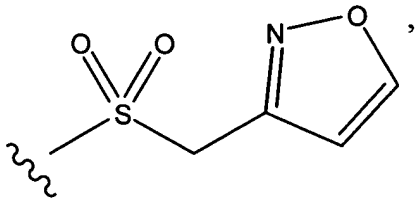


wherein Rings **D-T** are substituted or unsubstituted.

17. The method of Claim 16 wherein zero, one or more ring carbons atoms of Rings **D-T** are substituted with a group independently selected from -OH, -Br, -Cl, -I, -F, -OR^a, -O-COR^a, -COR^a, -CN, -NO_2, -COOH, -SO_3H, -NH_2, -NHR^a, -$N(R^aR^b)$, -$COOR^a$, -CHO, -$CONH_2$, -$CONHR^a$, -$CON(R^aR^b)$, -$NHCOR^a$, -$NRCOR^a$, -$NHCONH_2$, -$NHCONR^aH$, -$NHCON(R^aR^b)$, -NR^cCONH_2, -NR^cCONR^aH, -$NR^cCON(R^aR^b)$, -C(=NH)-NH_2, -C(=NH)-NHR^a, -C(=NH)-$N(R^aR^b)$, -$C(=NR^c)$-NH_2, -$C(=NR^c)$-NHR^a, -$C(=NR^c)$-$N(R^aR^b)$, -NH-C(=NH)-NH_2, -NH-C(=NH)-NHR^a, -NH-C(=NH)-$N(R^aR^b)$, -NH-$C(=NR^c)$-NH_2, -NH-$C(=NR^c)$-NHR^a, -NH-$C(=NR^c)$-$N(R^aR^b)$, -NR^dH-C(=NH)-NH_2, -NR^d-C(=NH)-NHR^a, -NR^d-C(=NH)-$N(R^aR^b)$, -NR^d-$C(=NR^c)$-NH_2, -NR^d-$C(=NR^c)$-NHR^a, -NR^d-$C(=NR^c)$-$N(R^aR^b)$, -$NHNH_2$, -$NHNHR^a$, -NHR^aR^b, -SO_2NH_2, -SO_2NHR^a, -$SO_2NR^aR^b$, -CH=CHR^a, -CH=CR^aR^b, -CR^c=CR^aR^b,-CR^c=CHR^a, -CR^c=CR^aR^b, -CCR^a, -SH, -SR^a, -S(O)R^a, -$S(O)_2R^a$, alkyl groups, substituted alkyl group, non-aromatic heterocyclic group, substituted non-aromatic heterocyclic group, benzyl group, substituted benzyl group, aryl group or substituted aryl group wherein R^a-R^d are each independently an alkyl group, substituted alkyl group, benzyl, substituted

benzyl, aryl or substituted aryl group, or,-NR^aR^b , taken together, can also form a substituted or unsubstituted non-aromatic heterocyclic group.

18. The method of Claim 16 wherein zero one or more ring carbon atoms of Rings **D-T** are independently substituted with a group selected from C1-C4 alkyl, C1-C4 hydroxyalkyl, *N*-morpholino, pyrimidyl, C1-C4 alkyl substituted pyrimidyl, -NH(C1-C4 alkyl), -N(C1-C4 alkyl)$_2$, -C(O)NH_2, -C(O)NH(C1-C4 alkyl), C(O)N(C1-C4 alkyl)$_2$, -NHC(O)(C1-C4 alkyl), -NO_2, C1-C4 alkoxy, -C(O)O-CH_2CH_2-NH(C1-C4 alkyl),-C(O)O-CH_2CH_2-N(C1-C4 alkyl)$_2$,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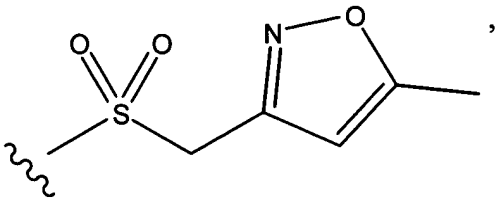
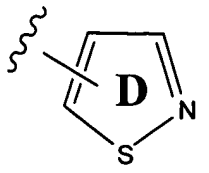

,

-NH-(phenyl), -NH_2, -CH_2NH-C(O)-O-(C1-C4 alkyl), -CH_2NH_2, -Cl, -F, -C(O)-O-(C1-C4 alkyl), -C(O)-NH-(C1-C4 alkyl), C3-C7 cycloalkyl, phenyl, -C(O)-*N*-morpholino, -S-(C1-C4 alkyl), -CN, furyl, -$S(O)_2$-(C1-C4 alkyl), -$S(O)_2$-NH_2, -$S(O)_2$-NH(C1-C4 alkyl) and-$S(O)_2$-N(C1-C4 alkyl)$_2$.

19. The method of Claim 18 wherein R_2 is represented by a structural formula selected from:



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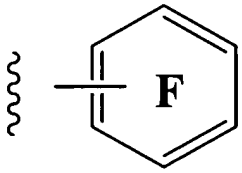

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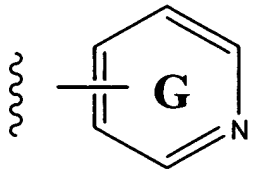

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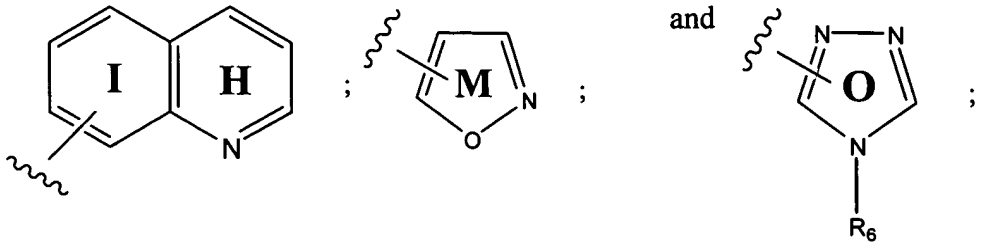
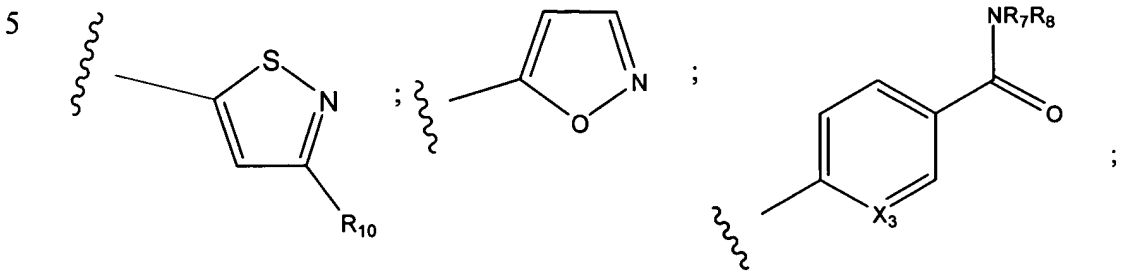
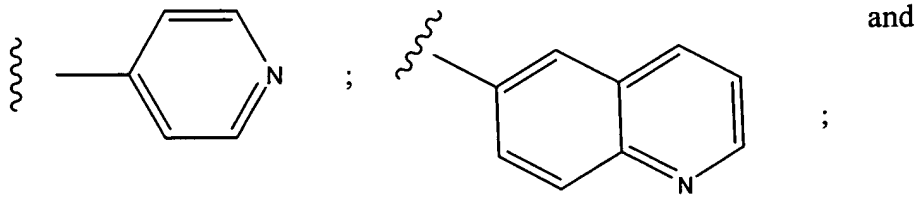
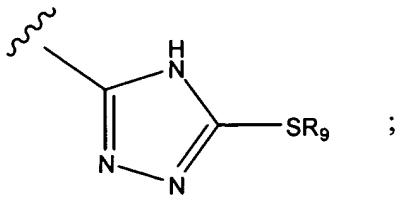


and R_6 is -H or a substituted or unsubstituted alkyl group

20. The method of Claim 19 wherein R_2 is represented by a structural formula selected from:







wherein:

X_3 is -CH- or -N-;

R_7 and R_8 are independently -H or an alkyl group or $-NR_7R_8$, taken together, is a nitrogen-containing non-aromatic heterocyclic group;

R_9 is an alkyl group; and

R_{10} is -H or an alkyl group.

21. The method of Claim 20 wherein Ring **A** is optionally substituted with one or more groups selected from -F, -Cl, -Br, -C1-C4 alkyl, C1-C4 alkoxy, -C1-C4 haloalkyl, C1-C4 haloalkoxy, $-NH_2$ and -CN.

22. The method of Claim 21 wherein Ring **A** is unsubstituted; R_3 is a phenyl group or pyridyl group substituted with one or more substituents selected from -Br, -Cl, -F, $-R^e$, $-OR^e$, -CN, $-COOR^e$, $-N(R^e)_2$, $-CON(R^e)_2$, $-NR^eCOR^f$, $-NHCONH_2$ or $-SO_2N(R^e)_2$; R_7 and R_8 are both -H and R_9 is methyl; and each R^e and R^f are independently -H, an alkyl group or a substituted alkyl group.

23. The method of Claim 22 wherein R_3 is a phenyl ring substituted with one or more substituents selected from -Cl, -F, $-R^e$, $-OR^e$, -CN, $-NH_2$, $-CONH_2$ and $-NHCOR^f$.

24. The method of Claim 23 wherein R_3 is a phenyl ring substituted with one or more substituents selected from $-CH_3$, $-CH_2CH_3$, $-OCH_3$, -CN, -F and -Cl.

25. The method of Claim 23 wherein R_3 is a phenyl ring monosubstituted with $-CH_3$, $-CH_2CH_3$, $-OCH_3$, -CN, -F and-Cl and wherein the phenyl ring substituent is at the *para* position.

26. The method of Claim 16 wherein R_2 is represented by the following structural formula: